GUAM EPA
TITLE V FEDERAL OPERATING PERMIT
STATEMENT OF BASIS

Guam Power Authority
Marbo Combustion Turbine Power Generating Facility

Permit No. FO-006

Facility ID:	FO-006
Facility Name:	Guam Power Authority - Cabras
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I. Purpose

Guam Power Authority operates the Marbo Combustion Turbine Generating Facility to generate electricity for the Island of Guam under the SIC 4911.

The purpose of this engineering evaluation is to identify all applicable requirements, determine if the facility will comply with those applicable requirements, and provide the legal and factual basis for proposed permit conditions.

II. Facility Location

Guam Power Authority is located at Marbo Base Command B-6 in Yigo, Guam.

III. Description of Facility Operations

The facility is a combustion turbine power generating plant. The operation of this facility is to help with load shedding on the island during outages of other power generating facilities. The only significant sources of emissions of air pollutants are one 16 megawatt (MW) combustion turbine, one 350 kilowatt (kW) black start diesel generator, and one 126,000

gallon diesel fuel oil storage tank. Other insignificant emission sources include a 550 gallon fuel purification storage tank and a 27 gallon black start diesel generator service tank.

IV. Equipment Listing and Permitting History

IV.A. Significant Emission Units

A listing of all permitted equipment at the facility is presented in the table below. This table also includes the Guam EPA (GEPA) permit number for those emission units with existing permits. The conditions from these permits have been incorporated into the Title V permit, which supercedes the existing GEPA permits.

Emission Unit Number	Unit Description	Associated Control Equipment	Guam EPA Permit Number
CT-1	Nominal 16-MW simple cycle combustion turbine	Water injection	MCT-473
BSG-1	350 kW black start diesel engine generator	N/A	N/A
FST-1	126,000 gallon diesel fuel oil storage tank	N/A	N/A

IV.B. Insignificant Emission Units

The following list of insignificant activities provided by the applicant in the permit application for this facility has been approved by GEPA. This equipment is not exempt from facility-wide requirements.

Unit Number	Description of Activities or Emission Units
FPT-1	550 gallon fuel purification storage tank
N/A	27 gallon black start diesel generator service tank

V. Potential to Emit

The annual potential to emit for each significant emission unit is presented below.

Emission Unit	Potential to Emit (tons/year)						
	NO_x	VOC	SO_2	PM_{10}	CO	Lead	HAP
CT-1	130.31	0.14	249.48	12.34	37.95	4.6×10^{-3}	0.43
BSG-1	9.56	0.77	0.63	0.68	2.06	--	8.4×10^{-3}
FST-1	--	0.12	--	--	--	--	--
TOTAL	**139.87**	**1.03**	**250.11**	**13.02**	**40.01**	**4.6×10^{-3}**	**0.44**

VI. Guam Requirements

The following table lists the applicable requirements from the Guam Air Pollution Control Standards and Regulations (GAPCSR) and from the approved Guam State Implementation

Plan (SIP). For rules where an applicability determination was required, a discussion is included below.

Section 1103.2	Guam Ambient Air Quality Standards
Section 1103.3	Visible Emissions
Section 1103.4	Fugitive Dust
Section 1103.10	Sulfur Oxides from Fuel Combustion
Section 1103.11	Open Burning
Section 1103.12	Control of Odors in Ambient Air
Section 1103.13	Asbestos
Section 1104	Permit Program Regulations
SIP, Section 7.5	Particulate Emissions from Fuel Combustion

VI.A. Particulate Matter (PM) Limits for Fuel Burning Equipment

Section 7.5 of the GEPA SIP requires that for fuel burning equipment between 1 MMBtu/hr and 1,000 MMBtu/hr in size, the allowable particulate emissions shall be calculated using the following equation:

$$Y = 1.02\ X^{-0.231}$$

Where:
Y = Allowable particulate emission rate (lb/MMBtu)
X = Operating rate (MMBtu/hr)

Assuming an engine efficiency of 40%, and using a conversion factor of 3.41 MMBtu/hr per MW, this limit would be required for engines between 0.12 MW and 117 MW. Therefore, the combustion turbine (Unit CT-1) and the black start emergency generator (BSG-1) are both subject to this limit. The allowable PM emission rate for each unit must be determined by the permittee depending on the operating load for each unit.

VII. Federal Requirements

The following table lists the applicable requirements from United States Environmental Protection Agency (USEPA) regulations. For rules where an applicability determination was required, a discussion is included below.

40 CFR Part 60, Subpart A	NSPS General Provisions
40 CFR Part 60, Subpart GG	NSPS for Stationary Gas Turbines
40 CFR Part 61, Subpart M	Asbestos

VII.A. New Source Performance Standards (NSPS)

VII.A.1 Gas Turbines

The applicability of the New Source Performance Standard for Stationary Gas Turbines (40 CFR Part 60, Subpart GG) was reviewed, and it was determined that this regulation applies to the gas turbine at this facility. NSPS Subpart GG applies to stationary gas turbines that commence construction, modification, or reconstruction after October 3, 1977. The gas turbine at the GPA Marbo facility was constructed after this date, so this NSPS applies. As a result, these requirements have been incorporated into the Title V permit for this facility.

VII.A.2 Tanks

The applicability of the New Source Performance Standard for Volatile Organic Liquid Storage Vessels (40 CFR Part 60, Subpart Kb) was reviewed, and it was determined that this regulation does not apply to the tanks at this facility. NSPS Subpart Kb generally applies to liquid storage tanks with a capacity greater than or equal to 75 cubic meters (m^3) (19,815 gallons) that store volatile organic liquids, and for which construction, reconstruction, or modification was started after July 23, 1984. One tank at this facility (Unit FST-1) meets the size and construction date requirements. However, 40 CFR 110b(b) states that tanks are exempt from the NSPS if they satisfy either of the following criteria:

1. They have a capacity greater than or equal to 151 m^3 and store a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa); or
2. They have a capacity greater than or equal to 75 m^3 but less than 151 m^3 and store a liquid with a maximum true vapor pressure less than 15.0 kPa.

The facility stores only diesel fuel, which is listed in USEPA AP-42 Table 7.1-2 as having a true vapor pressure of 0.0031 pounds per square inch (psi) at 40 degrees Fahrenheit (deg F) and 0.022 psi at 100 deg F. Converting units, this translates to a true vapor pressure range from 0.021 kPa to 0.15 kPa. These values are well below the thresholds in the criteria listed above, so Unit FST-1 is not subject to NSPS Subpart Kb.

VII.B. Compliance Assurance Monitoring (CAM)

Compliance Assurance Monitoring (CAM) is intended to provide a reasonable assurance of compliance with applicable requirements for large emission units that rely on pollution control device equipment to achieve compliance. The CAM regulations can be found in 40 CFR Part 64. CAM applicability is determined on a pollutant-specific basis. According to these regulations, an emission unit that meets all of the following criteria is subject to CAM:

1. The unit is located at major source required to obtain Part 70 or 71 permit;
2. The unit is subject to an emission limitation for the applicable pollutant;
3. The unit uses a control device (as defined by 40 CFR 64.1) to achieve compliance;
4. The potential precontrolled emissions of an applicable pollutant from the unit are equal to or greater than the major source threshold for that pollutant; and
5. The unit is not otherwise exempted by the CAM regulations.

Regarding the first requirement, the CAM rule (in 40 CFR 64.1) states that "*Part 70 or 71 permit* shall have the same meaning as provided under [40 CFR 70 or 71] provided that it shall also refer to a permit issued, renewed, amended, revised, or modified under any federal permit program promulgated under Title V [of the Clean Air] Act]."

After receiving a special exemption from USEPA, GEPA has adopted an "alternate operating permit program" according to the requirements of 40 CFR 69.13. As a result, so it was not immediately clear whether this program satisfied the definition in the CAM rule. USEPA Region 9 was consulted on this matter, and made a determination that GEPA's alternate operating permit program was promulgated under Title V of the Clean Air Act, so facilities located on Guam are potentially subject to CAM.

The combustion turbine (Unit CT-1) is the only source of emissions at this facility that is controlled. This unit employs water injection for the control of NO_x emissions, but it does not employ controls for any other pollutants. However, the NO_x emissions from this unit are less than the major source threshold.

Conclusion: None of the emission units at the facility are subject to CAM.

VIII. Periodic Monitoring

Requirement	Requirement Condition #	Existing Monitoring/ Recordkeeping	Monitoring/ Recordkeeping Added to Permit	Monitoring/ Recordkeeping Condition #
PM emission limit for fuel burning equipment	II.B.1.a	Annual source test for combustion turbine	Weekly opacity monitoring	II.D.4, II.d.19, and II.d.20
Opacity limits for fuel burning equipment	II.B.1.b	None	Weekly opacity monitoring	II.D.19 and II.D.20
SO_2 limit for combustion turbine	II.B.2.a	Annual source test	N/A	II.D.4
NO_x limits for combustion turbine	II.B.2.a	Annual source test	N/A	II.D.4
PM_{10} limit for combustion turbine	II.B.2.a	Annual source test	N/A	II.D.4
CO limit for combustion turbine	II.B.2.a	Annual source test	N/A	II.D.4
UHC limit for combustion turbine	II.B.2.a	Annual source test	N/A	II.D.4
Preventative maintenance	II.C.1	None	Inspection and maintenance recordkeeping	II.E.3

Requirement	Requirement Condition #	Existing Monitoring/ Recordkeeping	Monitoring/ Recordkeeping Added to Permit	Monitoring/ Recordkeeping Condition #
Adequate control measures preventing air quality exceedence	II.C.2	None	N/A	N/A
Operating load for combustion turbine >50%	II.C.3	None	Records of operating parameters	II.E.4
Water injection for combustion turbine NO_x control	II.C.4	Continuous monitoring system for water–to-fuel ratio	Fuel consumption recordkeeping	II.D.11 and II.E.2
Limitation on the amount of diesel fuel burned by combustion turbine	II.C.5	Fuel consumption recordkeeping	N/A	II.E.2
Fuel sulfur content limit for combustion turbine	II.C.6	Fuel sulfur content analysis	N/A	II.D.15 and II.D.17
Fuel sulfur content limit for black start generator	II.C.7	None	Sulfur content recordkeeping	II.E.5
Combustion turbine good operating practices	II.C.8	None	Records of operating parameters	II.E.4
Proper preventative maintenance for combustion turbine	II.C.9	None	Inspection and maintenance recordkeeping	II.E.3
Fugitive dust restrictions	II.C.10 and II.C.11	None	Weekly opacity monitoring	II.D.19 and II.D.20

IX. Streamlining Applicable Requirements:

Consistent with USEPA policy, overlapping or redundant requirements may be streamlined when these are incorporated in a Title V permit. In this process, the most stringent of the overlapping requirements is determined and included in the Title V permit (while the source of authority for this condition lists all related requirements, including those that have been streamlined). Streamlining allows the permit conditions to be listed in a clear and concise manner while ensuring compliance with all applicable requirements. The following section contains a description of streamlining that has been performed in this permit.

Condition II.C.6 – Fuel Oil Sulfur Content Limitation for Combustion Turbine

The existing GEPA permit for CT-1 states that the maximum sulfur content by weight of the No. 2 fuel oil used in this unit shall not exceed 0.5% sulfur. The NSPS for Stationary Gas Turbines (40 CFR Part 60, Subpart GG) includes a fuel sulfur limit of 0.8% by weight. GAPCSR Section 1103.10 states that no person shall burn fossil fuel containing in excess of 2.0% sulfur by weight. Since the limit in the GEPA permit is the most stringent, the 0.5% sulfur limit was included in the permit.

Condition II.E.2 – Recordkeeping

The existing GEPA Permit for CT-1 has a records retention requirement of two years while the GAPCSR Section 1104.12(7)(H) requires records to be retained for at least five years. Since the GAPCSR standard is more stringent, the five year retention requirement was included in the permit.